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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,487	06/29/2001	Tomomi Yamanobe	32011-173478	6307

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VENABLE

Post Office Box 34385
Washington, DC 20043-9998

EXAMINER

LEWIS, MONICA

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,487

Applicant(s)

YAMANOBE, TOMOMI

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

1. This office action is in response to the amendment filed November 4, 2003.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 and 7-14 are rejected under 35 U.S.C. 103(a) as obvious over Cuchiaro et al. (U.S. Patent No. 6,165,802) in view of Hayashi et al. (U.S. Patent No. 6,174,766).

In regards to claim 1, Cuchiaro et al. ("Cuchiaro") discloses the following:

- a) a main wiring layer (134) including a first material (For Example: See Figure 1);
- b) a coating layer including a first coating part (126) provided between said main wiring layer and said first electrode (124) (For Example: See Figure 1); and
- c) a coating layer is conductive and comprises a second material for preventing the infiltration of said substance into said main wiring layer (For Example: Column 5 Lines 14-32).

In regards to claim 1, Cuchiaro fails to disclose the following:

- a) a second coating part provided on the top surface of said main wiring layer.

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However, Hayashi et al. ("Hayashi") discloses a coating part on the sides of the wiring layer (For Example: See Figure 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include a coating layer on the sides of the wiring layer as disclosed in Hayashi because it aids in providing a reliable connection without deterioration (For Example: See Column 5 Lines 64-67, Column 6 Lines 1-67, Column 7 Lines 1-67 and Column 8 Lines 1-5).

Additionally, since Cuchiaro and Hayashi are both from the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Cuchiaro.

b) a third coating part provided on side faces of said main wiring layer.

However, Hayashi discloses a coating part on the sides of the wiring layer (For Example: See Figure 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include a coating layer on the sides of the wiring layer as disclosed in Hayashi because it aids in providing a reliable connection without deterioration (For Example: See Column 5 Lines 64-67, Column 6 Lines 1-67, Column 7 Lines 1-67 and Column 8 Lines 1-5).

Additionally, since Cuchiaro and Hayashi are both from the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Cuchiaro.

c) a first material reacts with a substance to produce a reducing agent, said substance being infiltrated from the outside to this main wiring layer.

Although Cuchiaro fails to specifically disclose the limitations listed above, the same material is utilized as in Applicant's invention therefore it would have the same characteristics (For Example: See Column 5 Lines 21-32).

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In regards to claim 2, Cuchiaro discloses the following:

- a) first material is aluminum (Al) (For Example: See Column 5 Lines 45 and 46).

In regards to claim 3, Cuchiaro discloses the following:

- a) second material is titanium nitride (TiN) (For Example: See Column 5 Lines 22-26).

In regards to claim 4, Cuchiaro discloses the following:

- a) second material is titanium (Ti) (For Example: See Column 5 Lines 22-26).

In regards to claim 5, Cuchiaro discloses the following:

- a) second material is titanium nitride (TiN) and titanium (Ti) (For Example: See Column 5 Lines 22-26).

In regards to claim 7, Cuchiaro discloses the following:

- a) coating parts are titanium nitride (TiN) films (For Example: See Column 5 Lines 22-26).

In regards to claim 7, Cuchiaro fails to disclose the following:

- a) a second and third coating part.

However, Hayashi discloses various coating parts (For Example: See Figure 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include coating parts as disclosed in Hayashi because they aid in providing a reliable connection without deterioration (For Example: See Column 5 Lines 64-67, Column 6 Lines 1-67, Column 7 Lines 1-67 and Column 8 Lines 1-5).

Additionally, since Cuchiaro and Hayashi are both from the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Cuchiaro.

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In regards to claim 8, Cuchiaro discloses the following:

a) coating parts are titanium nitride (TiN) films, and a coating part is a built-up film composed of a titanium (Ti) film and a titanium nitride (TiN) film (For Example: See Column 5 Lines 22-26).

In regards to claim 8, Cuchiaro fails to disclose the following:

a) a second and third coating part.

However, Hayashi discloses various coating parts (For Example: See Figure 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include coating parts as disclosed in Hayashi because they aid in providing a reliable connection without deterioration (For Example: See Column 5 Lines 64-67, Column 6 Lines 1-67, Column 7 Lines 1-67 and Column 8 Lines 1-5).

Additionally, since Cuchiaro and Hayashi are both from the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Cuchiaro.

In regards to claim 9, Cuchiaro discloses the following:

a) coating part is a titanium nitride (TiN) film, and wherein coating parts are built-up films composed of a titanium (Ti) film and a titanium nitride (TiN) film (For Example: See Column 5 Lines 22-26).

In regards to claim 9, Cuchiaro fails to disclose the following:

a) a second and third coating part.

However, Hayashi discloses various coating parts (For Example: See Figure 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include coating parts as disclosed in

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Hayashi because they aid in providing a reliable connection without deterioration (For Example: See Column 5 Lines 64-67, Column 6 Lines 1-67, Column 7 Lines 1-67 and Column 8 Lines 1-5).

Additionally, since Cuchiario and Hayashi are both from the same field of endeavor, the purpose disclosed by Hayashi would have been recognized in the pertinent art of Cuchiario.

In regards to claim 10, Cuchiario fails to disclose the following:

a) first coating part is a titanium nitride (TiN) sputtering film, and said second and third coating parts are TiN-CVD films.

However, the limitation of "titanium nitride (TiN) sputtering film, and said second and third coating parts are TiN-CVD films" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether

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claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 11, Cuchiaro fails to disclose the following:

a) first and second coating parts are TiN-sputtering films, and said third coating part is a TiN-CVD film.

However, the limitation of "TiN-sputtering films, and said third coating part is a TiN-CVD film" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 12, Cuchiaro fails to disclose the following:

a) first coating part is a TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film.

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However, the limitation of "TiN-sputtering film, said second coating part is a built-up film composed of a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a TiN-CVD film" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 13, Cuchiaro fails to disclose the following:

a) first coating part is a TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film.

However, the limitation of "TiN-sputtering film, said second coating part is a built-up film formed from a Ti-sputtering film and a TiN-sputtering film, and said third coating part is a built-up film formed from a Ti-CVD film and a TiN-CVD film" makes it a product by process

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claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 14, Cuchiaro discloses the following:

a) substance infiltrating from the outside is either water (H₂O) or hydrogen (H₂) (For Example: See Column 5 Lines 14-33).

5. Claim 15 is rejected under 35 U.S.C. 103(a) as obvious over Cuchiaro et al. (U.S. Patent No. 6,165,802) in view of Hayashi et al. (U.S. Patent No. 6,174,766) and Bailey (U.S. Patent No. 6,249,014).

In regards to claim 15, Cuchiaro fails to disclose the following:

a) reducing agent is either hydrogen (H₂) or hydrogen radical (H*).

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However, Bailey discloses hydrogen as a reducing agent (For Example: See Column 13 Lines 22-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Cuchiaro to include hydrogen as a reducing agent as disclosed in Bailey because they aid in reducing the degradation of the capacitors (For Example: See Column 13 Lines 22-57).

Additionally, since Cuchiaro and Bailey are both from the same field of endeavor, the purpose disclosed by Bailey would have been recognized in the pertinent art of Cuchiaro.

Additionally, the limitation of "reducing agent is either hydrogen (H₂) or hydrogen radical (H*)" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Response to Arguments

6. Applicant's arguments filed November 4, 2003 have been fully considered but they are not persuasive. Applicant argues that "there is no teaching or suggestion in Hayashi of a third coating covering side faces of said main wiring layer." However, Hayashi does disclose a third coating part (23) covering side faces of the wiring layer (26) (For Example: See Figure 13).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

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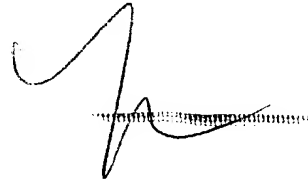
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communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

January 16, 2004



Mary Wilczewski
Primary Examiner